
(12) **UK Patent Application** (19) **GB** (11) **2 010 699 A**

(21) Application No **7848986**
(22) Date of filing **19 Dec 1978**
(23) Claims filed **19 Dec 1978**
(30) Priority data
(31) **9310/77**
(32) **27 Dec 1977**
(33) **Austria (AT)**
(43) Application published
4 Jul 1979
(51) **INT CL²**
B05D 5/08
(52) Domestic classification
B2E 402S 404S 433T 434T
438T 441S 470S 473S
473T 491S KB
(56) Documents cited
GB 1435682
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Chemical Technology Re-
views No. 79 Noyes Date
Corporation 1976 Y V 72
P. 14 (Quotes US Spec.
3163617 (Atlantic Refin-
ing) (A)
(58) Field of search
B2E
(71) Applicants
Kores Holding Zug AG
Baarerstrasse 57,
CH-6300 Zug,
Switzerland.
(72) Inventors
Peter Koreska
Robert Vittek
(74) Agents
Stanley, Popplewell,
Francis & Ross.

(54) **Release coated carrier for adh -**
sive materials

(57) A carrier for self-adhesive tapes, labels and the like, characterized in that a mixture of wax and polyethylene is applied to the carrier as an anti-adhesive back preparation. Preferably, the polyethylene has a density of from 0.918 to 0.930 and a melt index of from 1.2 to 4.6.

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SPECIFICATION

A carrier for self-adhesive tapes and the like

- 5 The present invention concerns a carrier for self-adhesive tapes, labels and the like with an anti-adhesive preparation upon the back and a method of manufacturing such a carrier. 5
- The applications of self-adhesive tapes, labels, and sheets have recently been substantially extended, and they are employed not only to join documents together or for labelling things but are also used for many other purposes, in particular, for example, as decorative tapes and self-adhesive decorative pictures. 10
- 10 Moreover, adhesive labels with signals, especially reflectors, have been used as various means of conveying information. Attempts have also recently been made to produce anti-corrosive protective tapes, conductive adhesive tapes and the like. Adhesive tapes and adhesive labels are even used in combination with various recording systems. 10
- A number of improvements have been made to adhesives in order to satisfy every requirement. Both 15 solvent adhesives and fusion contact adhesives have been developed, and modified according to the different fields of application. Adhesives based on rubber, acrylates, methacrylates, epoxy resins, polyolefin resins, and many others, have been chosen in order to produce non-ageing and effective adhesives in accordance with the particular purpose. 15
- However, as the range of products increased with the development of self-adhesive tapes and labels, it 20 became necessary to choose the anti-adhesive properties of the back to an even greater extent than to choose the properties of the adhesive, since the surface of the tape is particularly important. 20
- There has been a long search for a back preparation which:-
- a) has excellent anti-adhesive properties,
 - b) but nonetheless adheres to some extent to the adhesive, so that the adhesive tape does not come apart 25 when wound into a roll, 25
 - c) can serve as a carrier material for various additives to improve the surface design and
 - d) entails an improvement or at least no deterioration in the mechanical properties of the carrier material.
- Clearly, it is difficult to find a back preparation which fulfills the listed criteria. 30
- Recently, special importance has been attached to self-adhesive tapes having a matt surface, which can 30 therefore be written on, or printed upon. 30
- A transparent appearance and the ability to copy joined documents without any edge showing are generally required.
- In the case of coloured tapes, either the carrier material is pigmented and an anti-adhesive layer is applied which is 100% transparent, or the back preparation is provided with appropriate colouring. 35
- 35 It is not easy to find a back preparation which satisfies all the requirements. 35
- Difficulties are also caused by the fact that particular use has recently been made of plastic sheets based on polyvinyl chloride, polyvinyl acetate, polyamide, polyolefin and the like, to which many coating compounds adhere badly.
- Various different attempts have been made to give the surface of carrier materials the required properties. 40
- 40 One of the oldest techniques is siliconization, i.e. coating with polysiloxanes, having reactive end groups in the form of solutions, dispersions and aqueous emulsions. Coating was carried out by the usual application techniques such as dipping, impregnation, spraying by means of rollers or brushes. Polysiloxane coatings obtained from solutions or dispersions have the disadvantage that they have to be dried on the carrier and cleared of solvent. Gelation, cross-linking, polymerization or polycondensation of the polysiloxanes used 45 only occurs with the influence of temperature, for which purpose catalysts usually have to be added. 45
- Another proposal involves making anti-adhesive coatings which contain polyvinyl chloride acrylo-nitrile copolymers as the main component. With this technique, too, it is necessary to make a solution of the components and then to apply this to the carrier.
- The back preparations that have been made known up to now have had varying degrees of adhesion to the 50 carrier materials, so that they have not been universally usable. They have also often shown a tendency to ageing or have penetrated into the adhesive. 50
- The present invention has produced a plastics carrier with a back preparation which has excellent anti-adhesive properties and can be combined with practically any carrier material. It can serve as a film support for further substances without its properties being substantially changed. 55
- 55 According to the invention, a mixture of wax and polyethylene is applied as a back preparation to the surface of a carrier. 55
- The mixture preferably contains 10 to 40% by weight of wax, the preferred range being 25 to 30% by weight.
- Some of the wax components which may be used are synthetic wax, paraffin wax, polyethylene wax and 60 silicone fat, individually or mixed. 60
- The polyethylene according to the present invention should generally have a density of from 0.918 to 0.930 and a melt index of from 1.2 to 4.6.
- The usual delustering agents on both an inorganic and an organic base, the usual protective agents against ultraviolet rays, protective agents against ageing, protective agents against oxidation, pigments or metal 65 powders can be added to the mixture according to the invention. 65

Examples of delustering agents are various inorganic compounds such as talcum, chalk, silica, titanium dioxide and the like.

Suitable protective agents against ultraviolet rays are benzophenones and ethylcyanodiphenyl acrylates.

Preferred protective agents against oxidation are, for example, ethoxyquinolines or di-tertiary butylphenols, and as protective agents against ageing there may be used phenylene diamines or sterically screened phenols. 5

The usual white pigments such as titanium dioxide, but also coloured pigments on an organic or inorganic base, can be added as pigments.

Possible metal powders are in particular aluminium and bronze powder.

10 The choice of carrier material is practically unlimited. Sheets based on regenerated cellulose, and also paper or textiles, are suitable, but plastics sheets such as polyvinyl chloride, polyvinyl acetate, polyamide and polyolefin sheets are preferably used. 10

The adhesive material is selected according to the intended application, but from the point of view of the invention there are no limits. Particular possibilities are adhesives based on polyolefins and polyurethanes.

15 Wax is a material which certainly has excellent anti-adhesive properties, but its adhesion to the carrier material is inadequate. The admixture of polyethylene according to the invention substantially improves the adhesion to the carrier. 15

Self-adhesive tapes coated with the back preparation according to the invention can be rolled up with little or no fear that during unrolling the back preparation will be torn off as well or will penetrate into the adhesive. The layer of adhesive and the back preparation separate cleanly. However, labels can also be 20 coated with the back preparation according to the invention, stacked in any way and taken apart again at any time without unwanted sticking or adhering to one another. 20

Any suitable additives can be introduced into the back preparation according to the invention, so that the carrier material according to the invention can be used unrestrictedly.

25 As already mentioned at the outset, the back preparation can be mixed with additives so that the tape or label can be used for decorative purposes and also for technical applications. 25

If delustering agents are added the back preparation can be written on and makes no edges in the course of copying.

To obtain a carrier according to the invention, a mixture of wax and polyethylene is made together with the 30 desired additives; the mixture may then be fused and applied to the carrier. After the mixture has set, a back preparation is obtained with excellent properties. 30

The invention will now be explained in greater detail, by way of example only, by reference to a number of embodiments:

35 EXAMPLE 1 35

A mixture of
polyethylene (Lupolen 30-35 K, BASF)
with a melt index of 3.4-4.6

75 parts by wt.

40 V wax (polyvinyl ether)

25 parts by wt. 40

was applied at a temperature of
180°C from the melt onto a paper
carrier.

After setting, a coating with
45 excellent anti-adhesive properties
was obtained. 45

EXAMPLE 2

50 A mixture of
polyethylene (Lupolen 1814H,
BASF) with a melt index of 1.2-1.7
paraffin

80 parts by wt.

55 aerosil (silicate)

3 parts by wt.

O.L. silicone oil (Bayer AG)

5 parts by wt. 55

G 201 polyethylene wax

2 parts by wt.

(Chemie Linz AG)

10 parts by wt.

was applied at a temperature of

60 175°C from the melt into a

60

polyethylene sheet. An anti-

adhesive coating was obtained which
adheres excellently to the carrier material.

CLAIMS

1. A carrier for self-adhesive tapes, labels and the like, characterized in that a mixture of wax and polyethylene is applied to the carrier as an anti-adhesive back preparation.
- 5 2. A carrier according to claim 1, characterized in that the mixture contains from 10 to 40% by weight of wax. 5
3. A carrier according to claim 2, characterized in that the mixture contains from 25 to 30% by weight of wax.
4. A carrier according to claim 1,2 or 3, characterized in that the mixture contains one or more of paraffin 10 wax, polyethylene wax and silicone fat, as the wax component. 10
5. A carrier according to any one of the preceding claims, characterized in that the mixture contains a polyethylene with a density of from 0.918 to 0.930 and a melt index of from 1.2 to 4.6.
6. A carrier according to any one of the preceding claims, characterized in that the mixture contains one or more of a delustering agent, a protective agent against ultraviolet rays, a protective agent against ageing, 15 a protective agent against oxidation, an organic or inorganic pigment and metal powder. 15
7. A carrier according to any one of the preceding claims, characterized in that the carrier is made of a plastics material.
8. A carrier according to claim 7, characterized in that the carrier is made of polyvinyl chloride, polyvinyl acetate, polyamide or polyolefin.
- 20 9. A carrier according to claim 1 and substantially as hereinbefore described with reference to the foregoing Example 1 or Example 2. 20
10. A method of manufacturing a carrier as claimed in any one of the preceding claims, characterized in that a mixture of wax and polyethylene is fused and the melt is then applied to the carrier, after which the mixture is allowed to set.
- 25 11. A self-adhesive tape, label or the like which includes a carrier having a back-preparation thereupon, as claimed in any one of claims 1 to 9. 25
12. The features hereinbefore disclosed, or their equivalents, in any novel selection.